

Occupational Lead Poisoning & Overexposure

Definition: Occupational lead poisoning and overexposure to lead occurs through inhalation or ingestion of lead from the working environment. Occupational lead overexposure is associated with disorders of the blood-forming, nervous, and reproductive systems.¹ A case of lead overexposure is defined as a person with a blood lead level of ≥ 25 $\mu\text{g/dL}$.

Summary

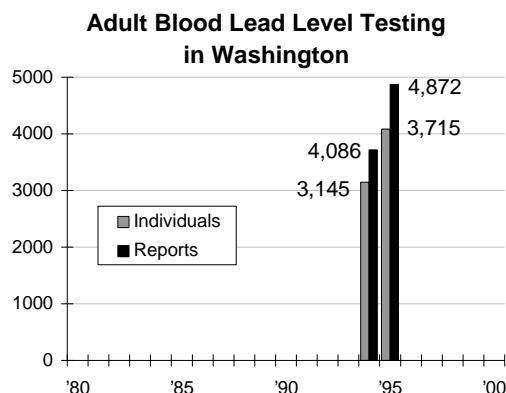
Over 8,000 individuals have had blood lead tests since the beginning of the Washington Occupational Lead Exposure Registry in May of 1993, and approximately six percent of those had blood lead levels ≥ 25 $\mu\text{g/dL}$. Most adult testing is the result of required employer-sponsored testing of lead-exposed workers. However, most lead-exposed workers do not have the benefit of this testing.

Time Trends

National trends show an increase in the number of at-risk workers tested for blood lead and the number of states which have identified lead poisoning for surveillance activities. As of the second quarter of 1995, 23 states reported adult blood lead results to the Centers for Disease Control and Prevention.² Although no reliable data were available for Washington state prior to May 15, 1993, data since then show similar trends as the national data over the past few years, with an increasing number of people being testing for blood lead. At this time, there is not sufficient information to determine the extent of lead exposures to workers.

Year 2000 Goal

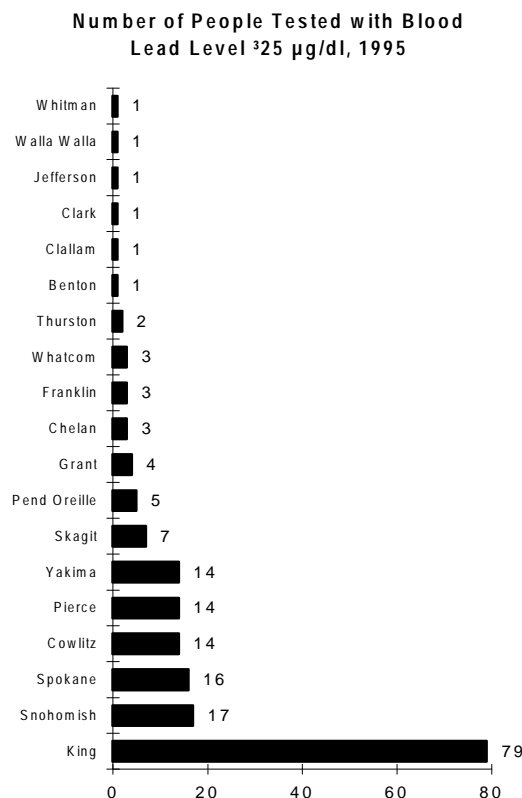
Washington State has adopted the national goal set by the US Public Health Service, to



eliminate exposures which result in workers having blood lead concentrations greater than 25 $\mu\text{g/dL}$.³

Geographic Variation

The chart below shows the number of individuals during 1995 with blood lead test results ≥ 25 $\mu\text{g/dL}$ by the county of the health care provider that ordered the test, when known. The county of the health care provider is unknown for 25% of the individuals tested. Note that the numbers reported in the following chart are not directly comparable between counties and may appear high or low depending on the number of lead exposed workers and the extent of blood lead testing.



Age and Gender

Through December 31, 1995, gender was identified from the blood lead laboratory reports for 52% of the individuals in the registry with levels ≥ 25 $\mu\text{g}/\text{dL}$. Of those, 97% were male. More than 95% of individuals identified by the registry with blood lead levels of ≥ 40 $\mu\text{g}/\text{dL}$ were male. There were 239 individuals with levels ≥ 25 $\mu\text{g}/\text{dL}$ whose gender was not identified through the laboratory reports.

Risk and Protective Factors

Industries associated with lead exposure and poisoning include radiator manufacturing and repair, battery manufacturing and repair, primary metal foundries, indoor firing ranges, and construction trades which involve working on existing structures where lead-based paint is present.

High Risk Groups

From the data obtained in the Occupational Lead Exposure Registry through December 31, 1995, seven broad industrial categories comprise the majority of the reported blood lead results ≥ 25 $\mu\text{g}/\text{dL}$. These industries include construction (17.5%), glass products (14.6%), electronic equipment (13.4%), chemical products (7.1%), auto repair and services (6.7%), transportation equipment (6.5%), and primary metal (5.5%). Because only a small proportion of lead-exposed workers are tested for blood lead, the overall problem of lead overexposure is likely greater than indicated by the current registry data. Although the identified distribution of elevated blood lead levels among the industries may not reflect the actual distribution, the registry has proven useful in identifying industries and individual businesses in which risk of exposure is elevated.

Intervention Points, Strategies and Effectiveness

Occupational lead exposures can be eliminated or minimized in many situations by substituting a less harmful product for lead, improving ventilation or other engineering controls, following improved personal hygiene measures, and using more effective or appropriate personal protective equipment. The hierarchy of preventing workplace exposures includes substitution of a less harmful product if available, engineering controls,

administrative changes, and as a last resort personal protective equipment for each worker.

Data Source

Washington State Occupational Lead Exposure Registry.

For More Information

Safety & Health Assessment & Research for Prevention (SHARP) Program, Washington State Department of Labor and Industries, (360) 902-5669.

Technical Notes

In the chart on the previous page, counties associated with blood lead test results which were not ≥ 25 $\mu\text{g}/\text{dL}$ are Adams, Grays Harbor, Island, Kitsap, Kittitas, Lewis, Mason, Okanogan, Pacific, and Stevens as well as all the counties listed in the chart.

Endnotes:

¹ Anderson, D.M., ed. Dorland's Pocket Medical Dictionary. 1989. Philadelphia: W.B. Saunders.

² Centers for Disease Control and Prevention. Adult blood lead epidemiology and surveillance-United States, second quarter, 1995. MMWR 1995;44(No.42):801-802.

³ U.S. Department of Health and Human Services. Healthy People 2000: National Health Promotion and Disease Prevention Objectives. DHHS Pub No. (PHS) 91-50212. Washington, DC: Government Printing Office, 1991, pp. 303-304.